

BOARDWATCH MAGAZINE

ELECTRONIC BBS AND ON-LINE INFORMATION SERVICES

Editor: Jack Rickard

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April 1989

THE BBS LIST

This month **Boardwatch Magazine** presents a list of 214 bulletin boards/on-line services available in area code 303. A total of 8 systems were deleted from the March list and we welcome 12 additions for a net gain of 4 - see page 20. Each number is verified by actual telephone contact within the 30 days preceding publication. Our national selection lists 99 systems we think you'll find useful beginning on page 18. Corrections may be addressed via the Denver PC Boardwatch Echomail Conference, by Fidonet Mail addressed to **JACK RICKARD** via Net 104 Node 555 at (303)973-4222, **JACK.RICKARD** on the General Electric GENie information service, or **BOARDWATCH** on the new 1-976-GEIS service.

TELE-BITS

ATT CUTS RATES AGAIN

AT&T has filed with the FCC to implement a \$533 million cut to basic long-distance rates - an average 1.6% cut - effective April 1, 1989. The decrease is to reflect decreased costs to AT&T to connect to local telephone companies. Accompanying the decrease is a \$0.30 per month increase in local access charges paid by consumers. Unfortunately, most of the rate cut is going to businesses to try to make AT&T more competitive in that arena. Meanwhile, FCC head Dennis Patrick thinks the current rate-of-return regulation of AT&T will be replaced by a rate-cap regulation plan by mid-year. Essentially, this will allow AT&T to earn whatever it likes as long as rates do not exceed a certain level.

IRS TAXTIME HELP BY PHONE

The deadline for filing income tax returns is of course upon us again this April 15. The Internal Revenue Service is growing increasingly high-tech however. They now operate a nationwide voice BBS titled **TELETAX** at (800)554-4477 where you can select recorded voice messages on various tax matters by entering codes from your touch-tone phone keypad. Entry 207, for example provides information on Business Income while 208 provides info on Sole Proprietorships. The Boise IRS office operates a **TAX PRACTITIONER INFORMATION SYSTEM BBS** at (208)334-1763. This is a standard RBBS bulletin board system accessible by modem. Although designed to answer technical questions from professional tax preparers, the system is open to the public at large. Most tax questions will be answered within 48 hours. Finally, there is an excellent income tax preparation package titled **TAX88.ARC** available as shareware on a number of bulletin board systems. The program provides a complete preparation package for filling out Form 1040 and a variety of other forms

FIRST EVER BBS EXPOSITION - GATEWAY 89

Paul Waldinger, operator of **THE SOUND OF MUSIC BBS** in New York City and publisher of **YOUTH BEAT** magazine is sponsoring a first-time exposition for electronic bulletin board systems at the Trust House Forte Viscount Hotel in Queens New York (near JFK Airport) April 28-30 1989. Commercial vendors such as Hayes Microcomputer Products, Alloy Computer Products, Inc., and Quarterdeck Systems, Inc., have already arranged for booth space despite an astronomical exhibitor fee of \$3000 for a first-time show.

The main draw of this show is the speakers list. Mr. Waldinger claims a host of luminaries among the shareware and BBS community as speakers including Marshall Magee, author of **Automenu**; Phil Katz, author of **PKARC** and more recently **PKZIP** who will give a presentation on file compression techniques; Richard Landry, of **PC World Magazine**; Gus Venditto and Judy Getz, of **PC Magazine**; and Andre Peterson, of **Word Perfect Corporation**.

A roundtable discussion on the future of electronic bulletin board systems will feature the authors of various BBS software including Phil Becker, author of **TBBS**; Tom Mack, author of **RBBS**; Thom Henderson, author of **SEAdog**, **ARCmail**, and **ARC**; and David Terry of **PCBoard**.

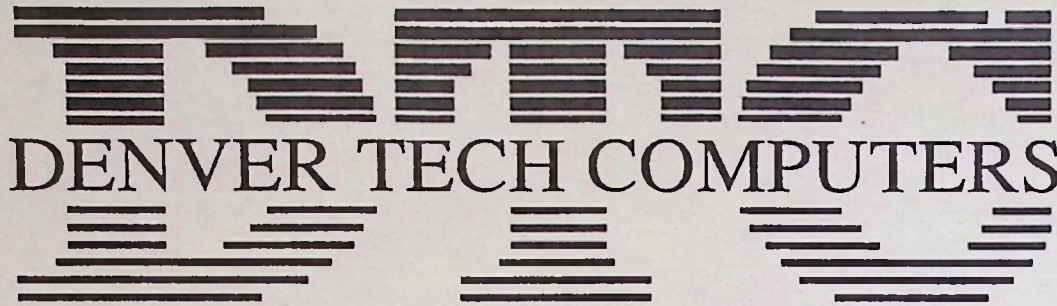
Tickets to the show are a reasonable \$5. Rooms at the Viscount Hotel begin at \$105 single. Viscount Hotel, JFK Airport, Jamaica, NY 11430; (718)995-9000. For more information on Gateway 89, contact Paul Waldinger, Direct-Link Media, Inc., 55 Atlantic Avenue, Lynbrook, NY 11563; (516)593-4700 or dial **THE SOUND OF MUSIC BBS** at (516)536-8723.

QMODEM SST VERSION 4.0 RELEASED

The Forbin Project Inc. released an updated version of their popular **QModem SST** Communications package on March 1, 1989. This full-featured communications program is released as Shareware with a \$30 registration requested.

The notable feature of the new release is size. The new 4.0 version comes in five separate files titled **QMDM40-1.ZIP** through **QMDM40-5.ZIP** totaling a whopping 657,133 bytes archived. The unarchived files require over 1.2

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CASH AND PRIZES WORTH MILLIONS

Power. Time. Money. Microsoft software gives you the power to do your job better. And Microsoft products save you time by being easy to learn and easy to use. And now, in the 'I Want it All' Sweepstakes, Microsoft is giving away money, too! One lucky winner will take home the Grand Prize: \$50,000.00 cash. The First Prize winner will get \$20,000.00 to spend on a "dream" computer system. 10 Second Prize winners will get to choose their own Microsoft product library valued at up to \$3,000.00. For the lucky 100 Third Prize winners we're giving away copies of Microsoft Word or Microsoft Excel. And for the fourth prize Microsoft is giving away a whopping 1,000 copies of Microsoft Flight Simulator or Microsoft Learning DOS.

And if you think that nobody ever wins sweepstakes, hang on. Because two **DENVER TECH COMPUTERS'** customers will also win \$1,000.00 Microsoft shopping sprees.

But there's only one way to win — just stop by **DENVER TECH COMPUTERS**, take the Microsoft demo, and turn in your entry. No purchase necessary. Sweepstakes ends April 30, 1989. See official entry form for complete rules.

*One prize per household. Microsoft and the Microsoft logo are registered trademarks of Microsoft Corporation.

NO PURCHASE NECESSARY TO ENTER OR CLAIM PRIZE. Open to U.S. residents 18 years of age or older. Employees of Microsoft Corporation, its affiliates, agencies, participating retailers, participating distributors and their families are not eligible to enter. Avoid where prohibited.

Entry form and complete rules available at participating Microsoft dealers until April 30, 1989. Michigan and Ohio residents only may obtain entry form and rules by sending a self-addressed, stamped envelope to: Microsoft Entry Form, PMSI Station, P.O. Box 13111, Bridgeport, CT 06673-3444, to be received by March 31, 1989

The following prizes will be awarded in a random drawing on or about May 31, 1989; (1) Grand Prize — \$50,000.00 cash; (1) First Prize — a computer system and software up to a maximum suggested retail value of \$20,000.00; (10) Second Prizes — up to seven Microsoft products, total suggested retail value not to exceed \$3,000.00; (100) Third Prizes — a Microsoft word or Microsoft Excel program, suggested retail value \$495.00; (1,000) Fourth Prizes — a Microsoft Flight Simulator or Learning DOS program, suggested retail value \$49.95.

Odds of winning determined by the number of entries received.

East of I-25

South of Arapahoe Rd.

6801 South Dayton Street

Englewood, CO 80112

(303) 799-9229

Monday-Saturday 9-6

MB of disk real estate. The program features improved context-sensitive help, a "Quick Learn" function to "record" dialing scripts, an integrated text editor, faster script execution, and an improved help screen.

Noticeably absent from the new release is the popular ZModem file transfer protocol - although provisions are made for adding external protocols such as ZModem.

Aside from the enormous size, Qmodem is also one of the prettiest communications packages available. Even the startup screen is attractive and all program functions are accessed through sometimes startling popup windows and panels. The previous version 3.1a featured a separate installation program. This has been incorporated into the main program in 4.0. The new version supports twelve function keys. It also supports use of the 16550 UART (Universal Asynchronous Receiver/Transmitter) chip. This is essentially a very fast replacement for the serial port chip in IBM compatible PCs. High speed modems such as the U.S. Robotics Courier HST 9600 bps model can, in some instances, simply overpower the stock serial port UART chip.

The QModem program includes a 280 page user manual in the QMDM40-4.ZIP file. The manual comes with a utility to print the file to the printer. Some users report difficulties printing past the halfway point in the file. A typeset manual is available for \$15.

The Forbin Project operates an excellent support BBS with five 9600 bps U.S. Robotics Courier nodes at (319)233-6157 and a single Hayes 9600 node at (319)233-6006. The Forbin Project, Inc., PO Box 702, Cedar Falls, IA 50613; (319)232-4516.

FLEXTRA 3.5 FLOPPY STORES 21.5 MB

Brier Technology of San Jose has announced a 3 1/2-inch floppy disk drive unit capable of storing 21.5 MB of data on a single removable floppy disk cartridge. Further, the new **FLEXTRA MODEL BR 3225** unit can read standard 1.44 MB IBM formatted floppies as

well. And the BR 3225 fits in a standard drive slot and in fact looks like a standard 3 1/2-inch floppy drive.

Last November we reported on the In-site 20 MB Floptical drive offering a 20 MB capacity with 65 millisecond access time on the 3 1/2-inch floppy cartridge heretofore thought of as good for 720 KB or 1.44 MB. In our January issue we reported on a Brier Technology 3 1/2-inch floppy disk drive capable of storing 43.2 MB of data on a single diskette and they claim a remarkable 29 millisecond access time.

The newly announced BR 3225 model uses a servo tracking system to pack 777 tracks per inch onto the magnetic surface vice the 135 tracks common in the standard 1.44 MB diskette. Brier's servo technique enables industry standard 3 1/2 inch media to store more than 20 MB of data by creating two distinct, horizontal magnetic layers in the disk media.

The lower or positioning tier, consisting of thousands of magnetically prerecorded positioning tracks, precisely controls the position of the drive read/write heads. The upper or surface tier is used to store data. In this way, the entire disk surface can be used for data storage while still utilizing the servo positioning track concept to control head tracking to the required accuracy.

The model 3225 has the unique ability to also read standard IBM formatted 3 1/2-inch diskettes. It uses a Small Computer Systems Interface (SCSI - pronounced "scuzzy") to provide an impressive 1.25 Mbps data transfer rate. The disk rotation speed of 720 rpm allows an average access time of 35 milliseconds.

The obvious application for such a unit is as a backup device without peer. But likely these units will change the way we store data entirely. Laptops and many low end computers will be able to survive quite nicely with 20 MB of storage at 35 ms access. The ability to load off the shelf software from 3 1/2-inch media using the same device is even more useful. The BR 3225 will be made available to original equipment manufacturers in large quantities at a price of \$450 beginning the third

quarter of 1989. Quadram is scheduled to be the first retailer/direct sales company to offer the drive. We want one. Brier Technology, 2363 Bering Drive, San Jose, CA 95131; (408)435-8463.

TELEBIT DUAL 19,200 BPS MODEM

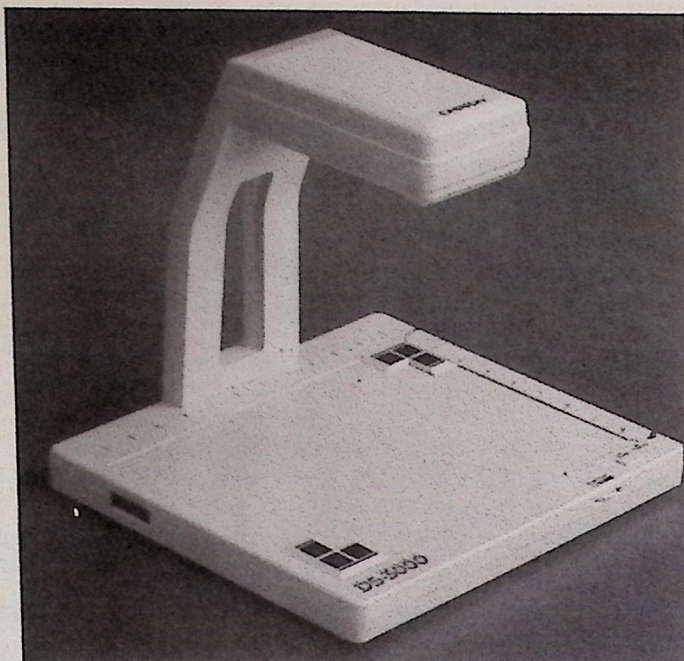
Apparently following U.S. Robotics' lead, Telebit Corporation has announced a dual mode modem supporting both the Telebit proprietary 19,200 bps Packetized Ensemble Protocol (PEP) and the 9600 bps CCITT V.32 standard. The new model is designated the T2500 and lists for \$1695. The unit is scheduled to ship this month. PEP modems have gained a niche around the Pacific rim and is considered the high-speed modem of choice in Australia, Hong Kong, and Taiwan because it is particularly robust on poor quality telephone lines. Apparently there is no shortage of such lines in those areas. Telebit Corp. 1345 Shorebird Way, Mountain View, CA; (415)969-3800.

CHINON OCR SCANNER

Chinon America Incorporated has introduced a low cost flatbed scanner package that includes an Optical Character Recognition (OCR) software package that brashly claims a 99.99% accuracy for characters 10 points or larger in size. The OCR PACKAGE III includes the 300 dot-per-inch (dpi) DS-3000 flatbed scanner and the ReadRight software package for \$995.

While most low-cost scanners offer a scan resolution of 200 dpi, the DS-3000 uses a linear charge-coupled device (CCD) camera positioned over the scanned art to produce a full 300 dpi resolution. This precisely matches the 300 dpi resolution of almost all today's popular laser printers including the Hewlett Packard Laserjet II and the Apple Laserwriter.

Unlike typical feedthrough scanners, the DS-3000 allows scanning of books, magazines, and even three dimensional objects. The only thing that moves during the scan process is a scanning mirror mounted in the camera head. Camera, bed, and art all remain quite stable while the scan is performed. This not only provides better, more consis-



tent scans, but very likely leads to longer useful life and reduced maintenance/alignment requirements.

A full page scan at 300 dpi requires about 24 seconds which protects the Chinon package from any gross accusations of speed. And the OCR software is limited to characters 6 to 12 points in size, 10 to 15 characters-per-horizontal-inch, and a maximum of eight lines-per-inch vertically. We could neither confirm nor deny the 99.99% accuracy figure touted in the corporate brochures but it would seem a very dubious claim. But considering the fact that OCR scanner/software combinations typically travel for around \$2400, the Chinon package compares extremely well at \$995.

Chinon also offers a half-card FAX package capable of working with the DS-3000 to send images to facsimile devices. Chinon America, Inc., 660 Maple Ave., Torrance, CA 90503; (800)441-0222 (voice); (213)533-1727 (fax). The unit is on display locally at Denver Tech Computers, 6801 South Dayton St. in Englewood.

WORLDWIDE MEDICAL DATABASE

by David Hakala. If you are interested in the ancient Chinese practice of Qi-Gong (apparently telekinetic

therapeutic manipulation of the patient's body from a distance), look no further. The World Research Foundation is a non-profit information network covering traditional and nontraditional medical, scientific, and environmental topics. Its library includes 10,000 tomes dating back to the 1600's, and links to over 500 databases in over 100 countries.

Search requests are handled the old fashioned way at the moment. Clients pay \$30 for the most recent 30 abstracted articles (if that many are available) gleaned from databases around the world on their subject of interest. Each request must include the exact spelling of the specific search topic you wish pursued, and a phone number in case any questions come up during the search. Results are mailed USPS.

Library searches also start at \$30. Computer searches contain the latest allopathic (pharmaceutical and surgical) citations from over 5,000 mainstream (?) medical journals. The library includes citations from non-Western and unconventional disciplines (Ayurvedic medicine from India, homeopathy, and things my keyboard won't handle!)

WRF also sells information packages, videotaped lectures, and other off-the-shelf products on many subjects. If you really want to *see* QiGong in action, send \$59 for videotape #126.

Ms. Theo Schmidt of WRF is working to catalog everything in an online abstract and reference database. She indicated it would be about one year before all you ever wanted to know about alternative health practices, environmental hazards, and nontraditional science would be available via modem. World Research Foundation: 15300 Ventura Blvd., Suite 405, Sherman Oaks CA 91403. Voice: (818) 907-5483. Field Office: P.O. Box 2818, 40 Soldier Pass Rd. #2, Sedona AZ 86336. Voice: (602)282-1208.

HOME PC WEATHERSTATION

TMI Inc. of Lake Oswego Oregon offers a fascinating little package for PC owners. The PC WEATHER package contains a plug-in circuit card, remote sensors such as an anerometer, wind vane, and temperature probes, and software to produce a home weather station controlled by an IBM compatible machine. The package costs \$249. The system can monitor barometric pressure, wind speed and direction, two separate temperature inputs, and, with an optional \$49.95 rain collector device, rainfall.

The software will calculate and display all that information plus the calculated wind chill factor, a wind gust record, high and low temperatures for various periods and daily and yearly rainfall stats. The software is memory resident allowing you to perform other functions with the weather monitoring program operating in the background. This would appear to be a great way to add a real-time weather data function to a BBS. TMI, Inc., 4000 Kruse Way Pl., 2-120, Lake Oswego, OR 97035; (800)247-5712.

ZIP CODE DIRECTORY DATABASE

Melissa Data Company of San Juan Capistrano California offers a fascinating database product at a very attractive price. The DZIP program comes on ten floppy diskettes for \$99 and includes a dBase III format database of over 90,000 zip codes with some fascinating associated information and three access programs providing some marvelous utility for individuals or companies that do any mailing at all.

EZIP is a name and address entry program that makes address entry much easier. The user enters the zip code and the program fills in city and state automatically. The user fills in name and street address.

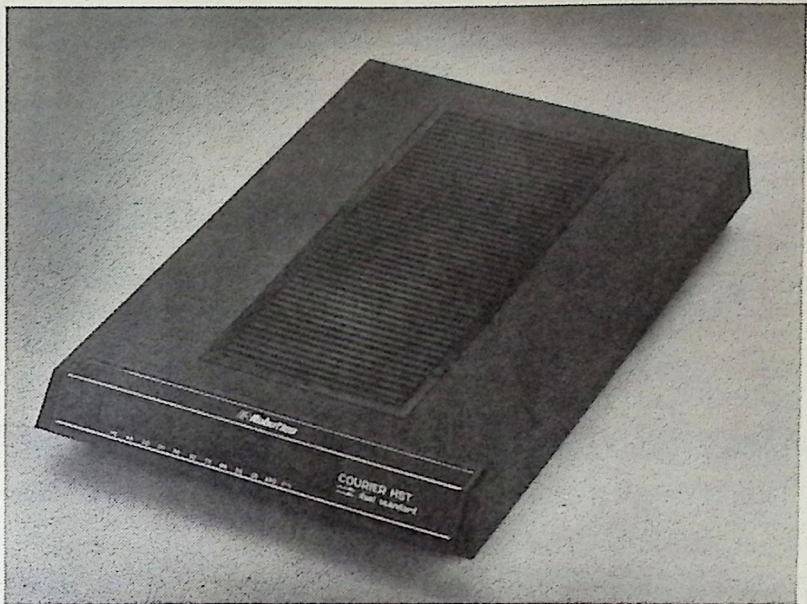
RZIP lists all zip codes within a given radius of a center point zip code or city.

QZIP is a pop-up utility that will quickly access zip information including city, state, latitude, longitude, area code, and time zone. We found out that our zip, 80127 was located in Jefferson County, area code 303, it is in the Mountain Standard Time zone, latitude is 39 degrees, 37 minutes and 1 second north and longitude is 105 degrees, 2 minutes, 53 seconds west.

The database is provided in dBase III format and of course you can access it using dBase or your own utilities. The one drawback is quite expected, you will pay an 8 MB price in hard disk real estate to host the database and utilities. But for almost any business involved with direct customer sales or mailing programs, this product is a must at \$99. Melissa Data Company, 32118-8 Paseo Adelanto, San Juan Capistrano, CA 92675; (800)443-8834.

US ROBOTICS DUAL STANDARD HST/V.32 MODEM NOW SHIPPING

U.S. Robotics, Inc., of Skokie Illinois began shipments of its new Dual Standard HST modem on February 23, 1989. And in the process, they dropped a bombshell that had been rumored earlier by incorporating 14,400 bit-per-second (bps) operation in both the new Courier HST model and the Dual Standard HST. Earlier Courier HST's



had provided a top speed of 9600 bps. Effectively, the announcement of 14,400 bps as the new standard HST mode ushers in a new era for high-speed dial-up modems used on the public switched telephone network. And for those who can afford the new technology, it makes reliance on the cheap but cumbersome packet data switch networks a thing of the past.

The new Dual Standard modem combines US Robotics proprietary HST mode, long a darling of BBS system operators, with the CCITT V.32 standard for 9600 bps modems. The CCITT V.32 standard requires echo cancelling circuitry that has in the past been extremely expensive (\$3000+) to implement. But newer V.32 chipsets have dropped prices dramatically in the past year and several companies introduced low cost V.32 modems at last November's Comdex show in Las Vegas.

Effectively, the new Dual Standard HST model allows connection to the large installed base of existing bulletin board systems that feature the Courier HST 9600 bps modem. But the Dual Standard also allows connection to other manufacturers' 9600 bps modems that adhere to the CCITT V.32 standard. In the past, virtually all 9600 bps connections had to be made between modems of the same manufacture.

Bob Mahoney, sysop of EXEC-PC BBS in Shorewood Wisconsin, has served as a beta test site for the new Dual Standard HST for several months. He reports successful 9600 bps connections with V.32 modems manufactured by Codex, Hayes, and Microcom. He also reports file transfers between two Dual Standard models in the HST mode under real world operating conditions in excess of 1400 characters-per-second (cps).

Mr. Mahoney runs what is probably the largest BBS in North America with 65 public switch lines, 10 Telenet packet switched line connections, 3,640 MB of online storage, 88 MB of RAM, and 105,000 files available for download. It uses custom BBS software written by Mahoney and operates across a number of 80386 PCs under the SCO Xenix operating system. The board receives in excess of 2000 calls daily and performs over 100,000 file downloads per month. According to Mr. Mahoney, trying to get on Telenet and actually make a connection via the complications of dial in nodes, dial out nodes, and so forth, is a kind of Cavequest-style game BBS enthusiasts no longer have to play. He plans to drop his 10 Telenet connections by May 1 and add ten public switched lines equipped with the new Dual Standard modems. The Dual Standard lines will be available on a separate hunt group at (414)963-2950.

Professional Computer Sales, Inc.

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MICROLINK B

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- TBBS Version 2.10 Multi-line BBS Software
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- Over 330 Megabytes of On-Line Storage
- Excellent Download Library
- USA Today Decisionline

MICROLINK D

(303) 237-8575

- TBBS Version 2.10 Single-line BBS Software
- 1200/2400/9600 HST Baud
- Over 200 Megabytes of On-Line Storage
- Excellent Download Library
- USA Today Decisionline

The Microlink systems are designed and operated for the serious BBS user. We have been serving the PC BBSing community since 1985 with quality shareware and public domain downloads, as well as interesting and informative message boards. Full access to Microlink B and Microlink D is limited to registered users, and is available for the low cost of \$25.00 (one-time access fee). Call either system today for additional information on becoming a Microlink Member.

The Courier HST model was also upgraded and began shipping concurrently with the Dual Standard HST. Actually, the new 14,400 bps Courier HST consists of the "motherboard" from the Dual Standard model. In fact, owners of the "new" model HST can upgrade to Dual Standard operation using a \$495 upgrade kit consisting of a plug-in "daughtercard" V.32 module. Owners of older HST modems are not as fortunate. Since the new models are not just a ROM upgrade but in fact an entirely new circuit card, U.S. Robotics' trade in options are a little bit limited. An upgrade from an earlier HST to the new Dual Standard, for example, requires \$595 plus the old modem. According to Susan Pompa, head of U.S. Robotics' sysop program, "the best thing to do is just sell your old modem on the secondary market."

Most sysops will likely retain the earlier HST models and add new Dual Standard HST as needed. The Dual Stan-

dard lists for \$1595 but bona fide operators of electronic bulletin board systems can qualify for a special price of \$725. Likewise the new Courier HST lists for \$995 but sysops can obtain these for around \$500.

Protocol negotiation is apparently not a problem although the initial ship date of the Dual Standard was delayed several times due to ROM software corrections as a result of beta test experiences. If the modem connects with a 300, 1200, or 2400 bps modem or another HST at 9600 or 14,400 bps, the handshaking operates as it always has with earlier Courier HST models. If the connection is V.32, it takes a few seconds longer. The modem fully and automatically supports 300, 1200, 2400, 4800, 9600, and 14,400 bps operation as well as V.32.

Though still relatively pricey compared to the plethora of 2400 bps modems available for less than \$200, the U.S.

Robotics' high end really does change PC data communications. The 50% increase in throughput from 9600 bps to 14,400 bps drops file transfer times to almost insignificant levels. As an example, a 70KB archived file requires about 11 minutes to transfer at 1200 bps. At 2400 bps this drops to about 5 1/2 minutes. At 9600 bps, the same file requires about 1 minute-forty seconds. And at the new 14,400 bps rate, it makes the trip in slightly over 50 seconds. This one file transfer would cost \$1.54 at an evening long distance rate of \$0.14 and a data transfer rate of 1200 bps. The same file would cost the \$0.14 in long distance charges to transfer at 14,400 bps.

While it is true that it requires a number of such file transfers for a hobbyist to recoup \$1595, BBS operators and businesses find it enormously attractive. Some BBS systems transfer over 1 MB each night. And the business market faces other costs such as the labor of the

gent paid to watch the transfer. The unit also fills the bill as a synchronous V.32 modem and many businesses will find they are replacing older V.32 modems costing \$3000-\$3500 with the new Dual Standard at \$1595.

Information on the new Courier HST and Dual Standard HST models is available on the U.S. Robotics Support BBS at (312)982-5092. U.S. Robotics, Inc., 8100 North McCormick Blvd., Skokie, IL 60076; (800)342-5877 (voice); (312)982-5235 (fax).

INTEL LOSES NEC CHIP SUIT

Federal Judge William Gray has issued a landmark decision in the INTEL/NEC chip lawsuit February 7, 1989. The four year old suit stemmed from NEC's marketing of their V-series microprocessors that essentially duplicated the NEC 8088 and 8086 chip functions. NEC had marketed a V20 chip capable of executing all 8088 chip functions - and faster - but also had the capability of running CP/M programs by recognizing the Z80 microprocessor command set as well. In his decision, Judge Gray did acknowledge the right to copyright microcode contained on microprocessor chips. But he ruled that Intel had forfeited those rights by allowing other second-source manufacturers make clone chips that did not carry a copyright notice. Further, he ruled that any chips manufactured to do the same functions would not infringe the microcode rights if they were developed independently using a "clean room" approach. This effectively paves the way for 80386 clone chips.

LOCAL ACCESS

KCNC TV STORM CENTER 4

Channel 4 television in Denver, Colorado has gone into the online weather business in a big way. The station has installed a DEC PDP 1183 minicomputer with several telephone lines and 1200 bps modems to provide National Weather Service data to callers equipped with PCs and modems. The service operates at (303)839-1188 and duplicates the WeatherBank service

out of Salt Lake City almost exactly - largely because WeatherBank is for the most part operating it for them. The local service is titled **KCNC STORM CENTER 4 DIAL-IN WEATHER DATA NETWORK**.

The service allows callers to access 193 different National Weather Service reports as mundane as temperature and rainfall projections or as exotic as the Fire Danger Statement (number 107), the Agricultural Operations Advisory (113), State Recreation Forecasts and Ski Info (71), a Fruit Frost Forecast (112 and my personal favorite), or the Travelers Forecast (70). All are quite up-to-date and essentially the National Weather Service is the source for all weather data used by TV meteorologists in preparing the nightly weather guess you see on TV.

You may obtain city and state forecasts of interest using a fairly simple notation. NWS 2, DEN requests the National Weather Service report 2 (cities) for Denver (DEN). The city names closely follow the airline conventions for naming airports (i.e. STL for St. Louis.)

The service also allows you to view some interesting weather maps. At the most basic level are the ASCII stick character maps that almost anyone can view. For example, entering MAPUST will display an ASCII map showing the day's high temperatures across the USA on a stick character map of the nation. It is crude, but you can get a good view of temperatures. MAPWT would illustrate a map of the western states showing the day's temperature lows.

Far more impressive are the digital radar map data available for download. Essentially, this requires the caller to have an EGA or VGA color system, a hard disk, and some special WeatherBank software. The software is ostensibly free but they do actually require a handling charge of some \$15. For that, you get the software on diskette, a user guide that is probably necessary to effectively use the product, and the shipping. Requests should be directed to WeatherBank Inc., 2185 South 3600 West, Salt Lake City, UT 84119; (801)973-3132.

The software actually contains the maps. You simply call and download the weather data from the service. The data is then superimposed over the maps contained in the software to produce an enormously attractive and informative weather display. The lightning strike map, for example, is for all practical purposes a real-time display of lightning activity across the US to a claimed resolution of 1/8 mile.

WeatherBank previously operated a similar service in the Denver area on a 976 Scoopline at \$0.30 per minute that was billed to your normal telephone bill. Apparently they didn't care for the split with US West. The 976 number has been disconnected and replaced by the KCNC TV STORM CENTER 4 number at (303)839-1188. While the new number is toll free locally, they are still a tad proud of this service - to the tune of \$0.30 per minute.

Essentially, you must set up an "account" on the system and deposit money to it. You may either mail in a check or use your Master Card or Visa. One interesting note. The service purports to be able to take your credit card number and call the bank automatically for verification while you are online. Once verification is received, you may go ahead and finish the logon process required to gain access to the goodies.

This feature would be much more interesting if it actually worked that way. We gave them a credit card number, and waited, and waited, and finally gave up and logged off. A fortunate decision. When we dialed back in the next day, it still noted that we had no funds in our account. The third day came and went with the same results. On day four we finally were verified. This end of the operation needs a little work.

Though still a tad pricey at \$0.30 per minute, the service provides some useful and thorough information on what is going to happen to the taters you planted. And you can use the information downloaded quite without restriction since it is supplied by the National Weather Service. KCNC TV 4, 1044 Lincoln, Denver, CO 80203.

TELECOMMUNICATION SYSTEMS

EXEC-PC

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BBS 414-964-5160

EXEC-PC, the country's largest electronic Bulletin Board Service (BBS), has the most extensive online collection of software available anywhere. Yours for the asking!

"Exec-PC, the biggest, meanest, most off-dialed and audacious BBS this side of Silicon Gulch." Milwaukee Magazine, June 1987

"How important is the Exec-PC BBS? To borrow a line from a famous hamburger chain, I was the 1,282,770th caller served. And I do mean 'served'. Exec-PC is perhaps the premier BBS in the nation for exchanging software." BYTE IBM Special Edition, Fall 1988

"Exec-PC, the bulletin board answer to SuperStation WTBS, connects PC users continents apart." PC World, July 1987

"One of the best is Bob Mahoney's Exec-PC out of Shorewood, Wisconsin..." PC Magazine, October 1988

"They provide one of the largest, most extensive libraries of public domain software in the world." Denver PC Boardwatch, December 1987

"Exec-PC Network is by far the largest BBS we've ever seen. You say you want files? This board has them—whatever kind you want...In addition to having one of the largest selections of public domain software, this BBS is a good source for technical information and help." PC Resource, October 1987

WHAT YOU COULD HAVE

Would you like public domain and shareware word processor programs, communications programs, or excellent database management systems? How about personal money managers, or General Ledger programs? If that is not enough, look at the 3000 games and 15,000 free business oriented programs, utilities, tutorials, and reviews. This gives you everything from hard disk reorganization and backup to stock market management systems. We also maintain the *entire PC-SIG collection* online, the 1200+ diskette collection of public domain software from California.

WHO HAS IT?

Exec-PC owns and operates the nation's largest electronic Bulletin Board System. Through our BBS, our huge software collection is available to anyone who has access to a modem and a telephone line. We have more than 70,000 individual files available for immediate download to your computer, 24 hours a day, every day.

Registration Form

EXEC-PC

P.O. Box 11268 Shorewood, WI 53211

YES!

Register me on the Exec-PC BBS for full access to the country's largest collection of software plus thousands of informative messages and conferences.

☐ 1 Year \$60

☐ 3 Months \$20

☐ Check Enclosed

☐ Visa



☐ MasterCard



Credit Card Account # _____

Signature _____

Expires _____ / _____

WHAT IT IS

The BBS consists of a large computer with BIG disk drives (more than 3 gigabytes!) and many phone lines connected to it. The computer currently has 90 phone lines, allowing it to talk to 90 callers at once; it receives about 2000 calls per day. Using the BBS is easy, since it is menu driven and you simply choose what you want to do.

WE SURE HAVE FILES

A typical user will call the BBS, ask the BBS to show what files are new since his or her last call, find files of interest, then transmit those files across the phone line. After hanging up, the caller can examine and use the new software.

WE SURE DO TALK

Our BBS also has an active conference system where thousands of people share ideas and solutions. Some conferences include: PC General Topics, Communications, For Sale, Programming, Desktop Publishing, LAN, Graphics, Hardware Speedup, CAD/CAM, Private e-mail, etc. Why pay expensive consultants when there are hundreds of experts available in our forums and conferences?

HOW TO CALL THE EXEC-PC BBS

1. Set your asynchronous modem for 8 data bits, No Parity, 1 stop bit.
2. Dial 414-964-5160.
3. The BBS will ask for your name, then you will be guided into the menus.

IT IS FREE, BUT

You can call the BBS at any time without registering. You can tour the system, read messages, and download some of our files. For greater access privileges you may register at the following rates: \$20 for 3 months or \$60 for one year. There are no hourly or hidden fees! You may subscribe online with VISA or MC, or by credit card, check or money order with the form below.

Exec-PC

P.O. Box 11268 Shorewood, WI 53211

Voice Orders 414-963-2880 **BBS 414-964-5160**



Prices & Specifications subject to change without notice.

BBS 414-964-5160

Name _____ Date _____

Address _____

City _____ State _____ Zip _____

Telephone (____) _____

Company (optional) _____

Name you will use for Logon to BBS (required)

First _____ Last _____

Password _____

HELLO DENVER

Before it's demise in February 1988, US West's **HELLO YELLOW** service was receiving an amazing 14,000 voice telephone calls daily via a 976 Scopline. The service provided yellow pages directory assistance essentially and Judge Greene ruled that this was acting as an information provider and ordered them to stop service. General Teleline of Englewood launched a similar service mid-February titled **HELLO DENVER** to essentially duplicate the service and hopefully the success of **HELLO YELLOW**. General Teleline is not bound by the 1984 consent decree affecting the regional bell operating companies such as US West.

HELLO DENVER operates at 1-976-1411 and is billed at \$0.84 per call directly to your telephone bill. If they can duplicate the 14,000 peak daily calls of **HELLO YELLOW**, the service will gross General Teleline a whopping \$11,760 per day from those who need help finding pizza. The service will look up telephone numbers, addresses, zip codes, provide travel directions, movie schedules, and even has some restaurant menus. The service will start out with 10 operators online. General Teleline, Inc., 13111 East Briarwood Ave., Englewood, CO 80112; (303)790-8332

LONG DISTANCE USA

BORLAND PC USERS GROUP BBS

Borland Software, Dell Computer, Intel PCEO, and Tymnet have joined together to create an **ASSOCIATION OF PC USER GROUPS BBS** operating out of Borland's home in Scotts Valley California at (408)439-9367. The system seems to be operated by Borland using a donated Dell System 325 25 MHz 80386 PC, eight 2400 bps modems donated by Intel, and an eight port unit donated by Tymnet. The system uses Galacticomm's **THE MAJOR** BBS software and is accessible through sixteen telephone lines. Jim Moody is listed as sysop.

The stated reason for life for this system is to serve as a registry for PC User Groups around the country. Currently, this consists of a couple of files listing the 93 member users groups and their addresses. This collection of user groups ostensibly represents over 100,000 PC enthusiasts.

Despite the august collection of backers and a technically superb collection of hardware, software, and telephone resources, we found the system just a tad spartan. The APCUG.ADR file contains an address list for the 93 member groups we found valuable simply because we can import it into our database and mail a sample copy of *Boardwatch* to each of them. Other than that, there were no particularly startling messages, bulletins, or files.

Still, Borland has essentially provided an excellent forum for centralizing information about user groups from around the country. If users groups do participate and update their information, place informational messages on the system, and support the concept, there is certainly a capable system here waiting for action.

DARTMOUTH COLLEGE BBS - DANTE'S DIVINE COMEDY ONLINE

by David Hakala. How many popes did Dante meet on his tour of Hell? If you can't sleep until you know the answer, dial up the free Dante Project BBS at (603)643-6300 (300/1200 bps) or (603)643-6310 (2400 bps). You will connect to the Kiewit Network at Dartmouth College. Enter "c u2" to reach Eleazar, the host computer (upper/lower-case *is* significant throughout these instructions!). At the "login:" prompt, enter "vpdemo" in lowercase. You'll need to tell Eleazar the type of terminal you are using. Some options include "ibmpc", "mac", "vt200" and "vt100." A complete list of terminal options is available by calling Dartmouth at the voice number below. An online user manual is also available, or you can write to Jonathan Altman, Database Administrator, for a hard-copy manual.

The Dante Project compiles over 600 years of full-text commentary on the epic poem, *The Divinia Commedia*. The system uses a commercial search program, BRS/Search(R) to provide instant access to information that formerly took five days to consult. There are presently 23 scholarly commentaries online in a variety of languages. The final database will include 60 commentaries as well as public forums for contemporary students.

For those still curious, Dante met seven popes in Hell. Access to Dante Project is also available via Internet (address: eleazar.dartmouth.edu). Those with a Telenet account can also connect (address: c 60320h). Dartmouth Dante Project: 301 Bartlett Hall, HB 6087, Dartmouth College, Hanover, NH 03755; (603)646-2633 (voice).

MADISON FIELDING CORP 800 SHOPPING BBS

Madison Fielding Corporation of Sarasota Florida maintains an Opus-based BBS they call **THE EVERYTHING STORE** at a toll-free (800)666-5080. The system is extremely limited and in fact you are only allowed seven minutes online. Essentially, they claim to have access to over 150,000 book titles, 12,000 videos, 33,000 music titles, and 11,000 software products that they assure us they can provide at 10-40% off retail.

In fact, they seemed to go to some pains to point out that many customers call and order merchandise via credit card without even checking the price. We decided to pass on that convenient option and we are really pleased that we took that approach as it turns out.

The service lists **NO** products and **NO** prices. About all you can do is leave an order or an inquiry and they will "get back with you". We thought this service was so obnoxiously uninviting it just had to be legitimate and probably provided some real bargains. They list shipping as \$1.50 for the first item and \$1 for each additional which is quite cheap as mail order shipping charges go. So we left an inquiry about pricing on **THE SOUND OF MUSIC** video (a rare one there) and a book titled **THE**

FIT OR FAT TARGET DIET that we understand is all the rage among porcine newsletter editors.

They did call us voice the next day and quoted a price of \$28.64 for the video and \$10.68 for the book. This seemed to be about in line with what we had checked at local stores (\$27.95 and \$9.95 respectively) but was certainly not 40% off of anything. We asked point blank what the discount was from and were told that it was 10% to 40% off of "retail" and we had been quoted 10%. It seems the 40% was reserved for quantity orders.

The stated shipping seemed to be a scam as well as the book did ship for \$1.50 but they wanted \$2.50 for the tape. We did point out the discount and shipping charges were stated quite boldly on the BBS. The lady told us she didn't see how they could make any money that way. We don't know either. If anyone has any ideas on how this poor woman can make some money, call her voice at (800)833-0720.

CHILDREN'S SOFTWARE BBS

Mike Cook of Oak Park Illinois operates a delightful BBS titled **DISCOVERY PLACE** at (312)383-6335 using **RBBS** software. The system is dedicated to children and seems to be directed toward very young children. Or perhaps to very young fathers. The board's main claim to fame is a 200 title library of public domain/shareware software for kids. Most titles were educational software but some we found were just for fun. **SESAME.ARC** plays the theme song from this stalwart of Children's Television. **TELLTIME.ARC** provides an analog clock display for learning to tell time. We found literally dozens of math and spelling drill programs. **AIR.ARC** is a file of paper airplane designs you print out on your printer and then fold on the dotted line - a big hit with our five and four year-olds.

The system also provides some more serious information as well, including an annotated list of recommended children's books, and a list of US Consumer Product Safety Commission warnings concerning child-related

products. We also found some really interesting messages and bulletins providing dietary tips and information for parents of children suffering from allergic reaction to dairy products. There was even a guest child ophthalmologist holding discussions on vision testing for infants.

Discovery place offers a 14 day free trial and a tiny \$5 per year subscription fee - barely half the price of a box of diapers. Mr. Cook's system is neither large nor technically impressive. He has a scant 10 MB of storage online and uses some basic hardware and a very basic BBS software package. But it does illustrate an excellent application of BBS technology to a very specific information niche - in this case, very young children. Such specialized information services can serve as a focal point for information on their subject topics. Discovery Place, 1111 S. Lombard Ave., Oak Park, IL 60304.

WESTERN DIGITAL HARD DISK CONFIGURATION BBS

The magazines make it sound so easy. You order a new 120 MB hard drive, they mail it to you, you screw into the front of your computer and presto change, the old, limp, grundgy Sinclair ZX-81 is now a sizzling, gleaming new Everex 33 MHz 80386. The bad news comes when you receive the drive and find you have entered the bizarre twilight zone of configuration and controller card jumpers.

Western Digital is by far the most popular manufacturer of hard disk drive controller cards. And they do recognize the problems presented by cards that can support fifty or sixty different disk drive configurations. They initially set up a voice BBS using one of the new voice messaging cards at (800)777-4787. The recorded voice actually walks you through the installation process for several of the more common Western Digital controllers.

But a picture, as they say, is worth a thousand words. The company announced a brand spanking new support BBS operational as of the final week in February. The new service is titled **WESTERN DIGITAL TECHNICAL SUPPORT AND INFORMATION**

CENTER and operates at (714)756-8176. The service operates using **TBBS** software and offers a superb presentation of online information.

General product information includes an application description for each disk controller device, Western Digital's new motherboard assembly, and subsidiary Paradise graphics products. It also provides a list of distributors with complete mailing info sorted by state.

More to the point, the service provides specific information on each product. We looked at the **WD1002A-WX1** controller card - a very common unit among clones. The system provided an excellent product description, an application guide for what hard disk drives it worked reasonably well with, and a complete installation procedure including a charming graphic of the card illustrating jumper locations as well as very detailed reference info on each jumper and what it did in various positions.

The service also provides a directory to at least 50 disk drive manufacturers listing each and every model and giving configuration parameters including number of cylinders, number of heads, and so forth. This information alone could be invaluable if you've lost your CMOS configuration and need the parameters for your own drive.

Finally, the service provides utilities for performing a low level format, and parking drive heads. We did think it odd that there is no message area provided where you can post a question or make suggestions. Judy MacHale is the "sysop" charged with gathering all this information. Western Digital Technical Support and Information Center, 2569 McCabe Way, Irvine, CA 92714.

FREE ONLINE HAZARDOUS CHEMICAL DATABASE

There is increasing concern about toxic and hazardous materials, particularly in how to store, dispose of, and clean up in event of fire or leakage. Part of the problem fire departments and disaster control teams have is the incredible variety of chemicals we now manufac-

ture. It becomes impossible for anyone to know all the various nuances of every chemical that might be involved in a fire or accident. Some fairly innocuous materials become explosive in the presence of others and other chemicals - completely harmless at room temperature - emit lethally toxic clouds when heated to several hundred degrees temperature.

Michigan State University offers a marvelously informative information service free of charge titled **Material Safety Data Sheets (MSDS)**. The system provides **OSHA Material Safety Data Sheets**, 7 or 8 pages in length, on literally thousands of chemical compounds. The data is prepared by Occupational Health Services Inc. of New York.

To access the system, dial (517)353-8500 using 8 data, No parity, and 1 stop bit. At the **HOST:** prompt enter **CLVAX1**. At the **NAME:** prompt, enter **MSDS**. Operation of the system is alarmingly simple. Enter the name of a substance such as **ACETONE** or **TRICHLOROETHANE**. Then type **MENU** and you will see a list of options as to where to send the report. The printers listed are University equipment so you would probably want to select **PRINT TO TERMINAL**.

The system sends out a seven or eight page data sheet providing the most detailed information on the substance imaginable. This includes chemical family, molecular formula and weight, common names, **OSHA** exposure limits, boiling and melting points, specific gravity, vapor pressure, solubility and so on.

The Fire and Explosion Data section provides an indication of how the substance reacts to heat and flame and what firefighting agents are effective.

Transportation Data lists the hazard class of the material, and labelling and packaging requirements for shipment.

The Toxicity Data lists health effects and recommended first aid treatment. Reactivity Data lists what other chemicals or metals cause problems in com-

bination with the material. And finally, the **MSDS** lists recommended storage and disposal instructions.

Overall, this system provides some outstanding in-depth information on a very specifically defined topic. An excellent research tool.

SHAREWARE

THE WHIZ - FILE FINDER

There must be over a hundred thousand public domain/shareware titles loose in the world by now - I don't use all of them. But of the 100,000, there are several I find useful. One I used every day was titled **WHEREIS** and I really liked it. It would locate a file anywhere on the default disk drive in just a few seconds - as long as I could remember the entire file name accurately. I retired **WHEREIS** this week in favor of a program titled **WHIZ** version 86 written by S.B. Behman (The Whiz-ard) of Saratoga California. I would encourage everyone to add this little utility to their tool box.

Whiz comes in an archive file titled **WHIZ86.ARC**. The file of interest within this archive is titled **WHIZ.EXE**. It is not entirely inconsequential in size at 18 KB as utilities go but it does earn its keep. Like all good utilities, **WHIZ** doesn't bear a great deal of explanation. It is a file finder. Type **WHIZ<filespec>** and the program locates the entered filename on your disk drives. It tells you where (what subdirectory) your file is located.

The Disk Operating System (DOS) developed by Microsoft for the IBM computer was not designed originally with a clear concept of how users would use 40 MB hard drives. The tools in the DOS bag don't quite equip you to deal with the complicated subdirectory trees many users erect on their drive systems. Some of us are just not good housekeepers. For whatever reason, fifteen times per day I need a file that I know is on one of the disk drives in one of those subdirectories. I don't know

which subdirectory. And often I don't even know the full file name or which drive stores it.

WHIZ is both fast and complete. It will search every disk drive device on your system that is active (door shut in the case of floppies). It displays each occurrence of the file name, the subdirectory it's located in, the file date/time stamp, file size, and so forth in a delightful full screen display. Press **ESC** and it goes away.

One superior feature of **WHIZ** is its ability to accept partial file names. It does, of course, honor the conventional * and ? wildcard characters supplied by **DOS**. But in addition, you can simply type in the part of the file name you remember and it will operate on that fragment quite adroitly - finding all files that contain that fragment. We located 49 files from among 2115 searched in 81 subdirectories. This was on a 44 MB Miniscribe 3053 drive configured as two 20 MB logical drives C: and D:. The search took 4.5 seconds. In fact, no matter what we searched for or what the results, it seemed to require about 4.5 seconds. This would indicate that the program is probably searching the File Allocation Table (FAT) rather than the entire disk. The result is that it is just terribly fast.

The list of "hits" is displayed on screen and if it requires more than one screen you can page up and down to peruse the list of found files. The list can be saved to a disk file, printed out, or just read on-screen. You can also sort it by date, by file size, by name, or by extension.

By placing **WHIZ.EXE** in your **DOS** path area, you can enter a **WHIZ** search from any drive, any subdirectory, and have every online device available searched in a heartbeat. You not only immediately see the file you're searching for, but any dupes as well with dates shown. And best of all, you need not remember the entire file name, just a fragment is all **WHIZ** needs. Highest recommendation. Registration is a modest \$10. S.B. Behman, 20581 Ashley Way, Saratoga, CA 95070.

File Compression Utilities Comparison					
Subdirectory of 194 files totalling 5,394,801 bytes.					
Program	Time	Output Size	Percent	Company	Support BBS
PKZIP 0.90	2:37	2,604,299	51.72%	PKWare, Inc.	(414)352-7176
PKZIP 0.90 -EB4	10:10	2,223,742	58.78%		
PAK 1.60	6:58	2,460,564	54.39%	NoGate Consulting	(616)455-6270
ARC 6.01	4:59	2,795,383	48.18%	SEA	(201)473-1991
ZOO 2.01	5:14	2,669,590	50.52%	Public Domain	

COMPRESSION UTILITIES - HEAD TO HEAD

The PC community did enjoy a brief golden age where file compression utilities were concerned. For a couple of years, users could compress a series of files making up the typical software program into a single file termed an "archive". This archive not only had the advantage of singularity, but by virtue of several compression techniques it was actually 30-50% smaller in size than the sum of the component files. Obviously this was a boon to data communications aficionados. Not only could they upload/download a single file rather than 30 to get an operational program, but their online time would be less as well. When dialing long distance, this became a matter of hard economics.

For the past few years, the standard in data compression was ARC from System Enhancement Associates (SEA). The program title was short for the generic term "archive" and all ARC output files featured the file extension .ARC. The program contained several different file compression algorithms along with an evaluation engine that would select the optimum technique for compressing a particular file.

Written in the C language, the program was considered quite fast for its time and the resulting .ARC files were smaller than those produced by the other early file compression programs. Sysops all over the country began making files available for download in ARC format and encouraging callers to download the shareware ARC program so they could unarchive or extract the files once downloaded.

As a result of this standard, a number of other vendors developed utilities that could perform functions on the .ARC files. Vern Bueg produced a faster version of the programs main features in two separate programs ARC A and ARC E. These essentially duplicated the two primary functions of ARC without all the bells and whistles. Shell programs were developed to perform archive functions from windows, menus, and other more exotic interfaces.

Phil Katz, a 23 year-old University of Wisconsin Milwaukee Computer Science graduate living in Glendale Wisconsin, introduced a new variant on the .ARC theme in 1986. The new program was titled PKARC and the company he founded was known as PKWare. The program could extract files from any existing archive. It also created archives of its own but it did add an additional compression algorithm that in some cases make the resulting .ARC files slightly non-standard. This touched off a storm of debate as to which version should be "the standard". The bottom line again turned out to be performance. The PK product produced files that were smaller than SEA's ARC did. And it did it faster. In fact, it typically did it in less than a third the time it took ARC to produce the same result. Sysops liked the smaller output file size because they could store more files on the same amount of disk space. Users liked the speed. The product became immensely popular and within just a few months, it had become THE archive utility.

The problem with shareware is that few BBS users register it unless it is really a program they are excited about. Despite popular myth, few shareware authors

are really too aggrieved about this and almost none of the successful ones are. Why? For the same reason that commercial software houses largely gave up the technological fight against piracy. They found that the money in software was in sales to businesses. And the people who downloaded shareware from the local BBS and took it in to their offices were in effect acting as unpaid sales agents for the product. Few corporations would risk a copyright suit over a piece of software that purported to cost \$39. And when they found out they could site license the entire company for a grand or so, it looks like quite a bargain. So almost all the successful shareware entrepreneurs - DataStorm, Magee Enterprises, SEA, PKWare, and so forth, made money because their products were attractive to businesses. And this was where the battle of the two ARCs appears to have come to a boil.

The business market was profitable enough that System Enhancement Associates began taking out small ads in various business trade journals. So did PKWare. In fact, the two often appeared on the same page.

In late 1987, SEA demanded a license agreement from PKWare for use of the ARC technology, file format, and so forth. PKWare rejected the offer. In 1988 SEA filed suit in the 10th district court in the state of Wisconsin alleging copyright infringement and trademark violations. Disturbingly, SEA seemed to be claiming rights to the file extension .ARC itself, an extremely dubious legal claim.

In August 1988, PKWare and SEA reached an out-of-court settlement grossly in favor of SEA. For whatever reason, PKWare agreed to stop market-

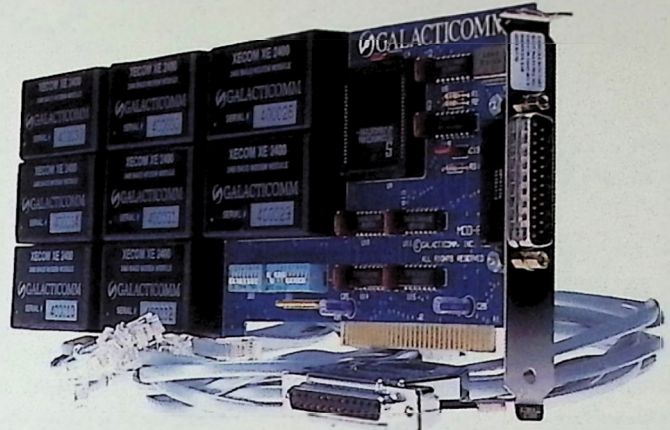
How To Support Your Customers

You can provide software updates, answer technical questions, and offer reams of product information to anyone with a modem. 24 hours a day, 7 days a week, **unattended**.

All you need is a PC, XT, AT, or 386-compatible, and a Galacticom multi-user hardware/software package. And some phone lines.

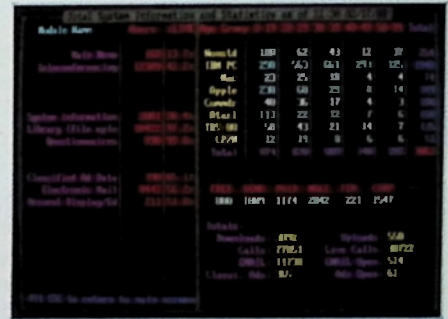
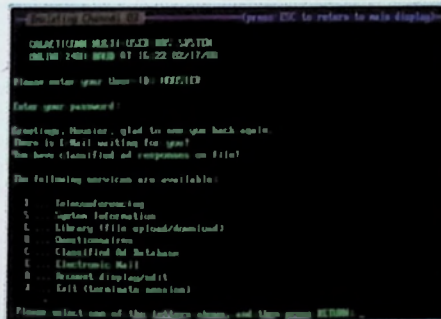
Our multi-user Bulletin Board System software, called **The Major BBS™**, supports your customers in several ways:

- Public Posting Areas technical dialogue, bulletins, Q&A listings
- Private E-Mail for one-on-one customer support
- Teleconferencing online "seminars" and real-time interaction
- File Upload/Download distribute updates, P.R. info, "app notes"
- Questionnaires for market research, order forms, etc.



Our multi-modem PC cards are available in several configurations: 2 to 8 modems per card at 2400 baud, or 2 to 16 modems per card at 1200 baud. These are true single-slot cards with the modems built right in — no additional serial ports, power supplies, or external boxes of any kind are required.

The Major BBS can support **up to 64 users** simultaneously, although most of our customers operate small 4- to 16-user systems. The C source code is also available, so that you can modify the system to suit your specific requirements.



For \$59, we'll send you an introductory copy of *The Major BBS*, suitable for use with your standard COM1 and/or COM2 modems. This is a fully functional version for up to 2 simultaneous users (3 if you count the SysOp). You can upgrade later to a fully supported 4, 8, 16, 32, or 64-user version for only \$300 per doubling (plus modem hardware of course!).

Yes! Send me a copy of
THE MAJOR BBS!

Name _____

Company _____

Address _____

City _____

State _____

Zip _____

(Florida orders add \$3.54 tax. Overseas orders add U.S. \$25 for shipping.)

☐ \$59.00 check enclosed

☐ \$67.30 for C.O.D.

☐ \$65.15 for credit card:

☐ VISA ☐ MC ☐ AMEX / _____

Exp. Date _____

Signature _____

GALACTICOMM

Galacticomm, Inc. 4101 S.W. 47 Ave.
Suite 101, Fort Lauderdale, FL 33314

Modem: (305) 583-7808

Fax: (305) 583-7846

Voice: (305) 583-5990

HARDWARE SPECIFICATIONS

	Model 4	Model 16	Model 2408
Maximum # of modems per card ...	4	16	8
Baud rates (auto-selecting)	3/1200	3/1200	3/12/2400
Length	5-3/16"	13-1/8"	13-1/8"
Height	4-3/16"	4-3/16"	4-3/16"
Thickness	3/4"	3/4"	3/4"
+5V max current (per modem)	250 mA	250 mA	190 mA
-5V max current (per modem)	-25 mA	-25 mA	-20 mA
R/W access time	250 ns	250 ns	150 ns
Maximum PC/AT-style speed	16 MHz	16 MHz	(no limit)
Maximum PC/XT-style speed	12 MHz	12 MHz	(no limit)
Maximum "zero-wait-state" speed ..	10 MHz	10 MHz	(no limit)
Operating temperature	0° to 50° C	0° to 50° C	0° to 50° C
Storage temperature	-25° to 85° C	-25° to 85° C	-25° to 85° C
Telephone line interface (each)	RJ-11 (male)	RJ-11 (male)	RJ-11 (male)
AC Impedance	600 ohms	600 ohms	600 ohms
Protection	FCC Part 68	FCC Part 68	FCC Part 68
Transmit Level	-9 dBm (max)	-9 dBm (max)	-9 dBm (max)
Carrier Detect Sensitivity (on)	-43 dBm (min)	-43 dBm (min)	-45 dBm (nom)
Carrier Detect Sensitivity (off)	-48 dBm (min)	-48 dBm (min)	-48 dBm (nom)
DAA Loop Current	20 mA (min)	20 mA (min)	20 mA (min)
300 bps protocol	Bell 103A	Bell 103A	103A / V.21
1200 bps protocol	Bell 212A	Bell 212A	212A / V.22
2400 bps protocol	—	—	V.22 bis
# of I/O ports (10-bit decode)	2	2	1
# of I/O ports (16-bit decode)	8	32	64
I/O addr DIP switch select range	200H to 3FEH	200H to 3FEH	200H to 3FFH
Type of I/O slot accepted	8/16/32	8-bit only	8 or 16-bit
Port interface model	8251A UART	8251A UART	SCC2698
Command set supported	XECOM 1201	XECOM 1201	Hayes

BBS SOFTWARE SPECIFICATIONS

RAM requirement	512K (640K if more than 16 users)
Extended/expanded RAM requirement ..	none
Hard disk requirement	20MB (minimum)
Operating system requirement	MS-DOS/PC-DOS 3.0, 3.1, 3.2, 3.3, and up
LAN compatibility (none required)	Novell, Corvus, 10-Net
C source compatibility	Turbo 1.5, Microsoft 4.0/5.0, Lattice 2.14
Btrieve compatibility	V4.01 and up (single-CPU version)
Executable file size	200K without overlays (subject to change)

User Account Management

Max number of user accounts	8,000,000
Selectable database fields	screen width, name, company, address (2 lines), phone no., system type, age, sex
Maximum User-ID length	9 characters
Maximum password length	9 characters
Max user-time "meterable"	2 billion seconds (63 years)

SIGs (Special Interest Groups)

Max # of SIGs	200
SIG user main menu options	Read/write bulletins, upload/download files, teleconference, select another SIG
Search strategies supported	keyword search, scan, title list
Security levels (per user per SIG) ..	invisible, read, download, write, upload, Co-Op, SIG-Op, SYSOP
"Quickscan" SIGs (per user)	20
Message threading	forward or backward, by topic
Tags maintained per message	message no., date, time, reply count, "reply-to", "forwarded-by", "cc:-of"
Max message topic length	40 bytes (plus 32 byte aux. topic)
Max message text length	1920 bytes
Max file size	up to size of disk
Max # of messages + files at once ..	2,000,000
Max # of messages + files ever	4 billion
Upload/download protocols	XMODEM, XMODEM-CRC, YMODEM, ASCII (paginated or non-stop)
Special features	novice/expert modes, CD-ROM compatible, context-sensitive help, keyword memory

Electronic Mail

E-Mail main menu options	Read/write/modify/erase messages
Tags maintained per message	message no., date, time, RRR, ATT, "reply-to", "forwarded-by", "cc:-of"
Maximum message topic length	40 bytes (plus 32 byte aux. topic)
Maximum message text length	1920 bytes
Maximum "attachment" file size ...	up to size of disk
Upload/download protocols	XMODEM, XMODEM-CRC, YMODEM, ASCII (paginated or non-stop)
Special features	carbon copies, forwarding, auto-purge, 2-way auto-alert, return-receipts

Teleconference

Number of "CB" channels	65,535
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User screen display format	transcript
Max concurrent users/channel	64
Special features	"chat", "page", "whisper", activity-scan, list/unlist, moderators, "squelch"

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Max no. of questionnaires	10
Max no. of questions in each	20
Max length of each question	1920 bytes
Max length per answer	127 bytes
Special features	results display option, offline report generator with duplicate elimination

User Registry

Max no. of registered users	4,000,000
Max no. of fields per user	30
Max overall storage per user	870 bytes
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Special features	directory scan, detailed lookup, auto-alert if not registered, profanity filter

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ing PKARC, and in fact to cease development on ANY utilities that operated on .ARC files. Essentially, this marked the end of the ARC era as a standard. Within weeks, PKWare had introduced a similar utility using the .PAK extension which was then picked up by another vendor. Many sysops, perceiving SEA's actions as litigious and belligerent, campaigned for a return to a truly public domain compression algorithm such as ZOO.

This past February, to the delight of users and system operators alike, both companies introduced capable new utilities elevating the utility of the compression programs even further. On February 16, SEA released ARC Version 6.0 to the public in the file ARC600.EXE. This was upgraded within days to ARC601.EXE to fix some minor bugs that surfaced. The new program was ostensibly four times faster than the previous 5.32 release. Additionally, it introduced a new function allowing subdirectory trees to be compressed along with the files. This meant that you could invoke ARC with directions to a subdirectory. The program would compress all files in that subdirectory. It would also add to the archive the sub-subdirectories it contained and all files in those directories. When the process was reversed, the subdirectory tree structure would be restored as it originally was.

At almost the same time, PKWare introduced their new utility, PKZIP. This program produces archives with the file extension .ZIP. PKZIP was still significantly faster than ARC, and it also featured the ability to "collapse" subdirectories. Perhaps more importantly, PKZIP offered users a choice between speed and file size. This tradeoff existed all along. If you designed a compression utility to operate faster, you usually had to give up some extra compression. If you designed it to create optimally small files, it usually took longer to do so. PKZIP defaults to a very fast mode. But users can add a command line switch statement to make it slow down a bit and compress a bit more. The maximum compression is obtained by appending -EB4 to the command line. This results in an extra 10% compres-

sion on binary files although performance on ASCII text is not so impressive.

History is beginning to repeat itself. The original PKARC won the hearts of sysops by giving them back some precious disk drive real estate. PKZIP seems destined to do the same and for the same reasons. Roy Timberman operates the Sound Advice BBS in Kansas City, MO at (816)436-4516. This is a popular multiline PCBoard system operating in that area. According to Timberman, PKZIP is being adopted nationwide as a new standard by sysops on the basis of the -EB4 command line switch. Using a utility titled ZIP-KIT2 by Thomas Atkinson of Milwaukee, Timberman converted every .ARC file on a 120 MB hard disk drive to .ZIP format. Although the operation took a solid six hours to perform, he reports he gained 12 MB of file space by doing so.

EXEC-PC BBS of Shorewood Wisconsin has had a close relationship with PKWare for some time. They are also one of the largest BBS in the world with 3.64 Gigabytes (3640 MB) of online files and 75 access nodes. According to sysop Bob Mahoney, he has already converted over 2 Gigabytes of files to .ZIP format - a process requiring three solid days of processing. But he gained 200 MB of disk space by doing so. He claims EXEC-PC will be a .ZIP system. He will accept uploads in .PAK or .ARC format but intends to run a watchdog utility that will automatically convert them to .ZIP before posting them for download.

The accompanying panel shows our attempt at devising a fair and realistic test for these archive utilities. Essentially, we took a 5,394,801 byte directory containing R:Base System V executables and data files and compressed it using each listed compression utility. We timed the process with an ordinary stopwatch and noted the resulting output file sizes and calculated the percentage of the original size requirement that was eliminated by compression. The results clearly indicate that PKZIP was undoubtedly the fastest of the crew with a

2:37 second process time on a 12 MHz AT using a 25 ms Miniscribe 3053 hard disk. Although the actual times will vary from machine to machine, the relationships should hold across all hardware. The PKZIP with the -EB4 switch produced the smallest files at 2,223,742 - almost a 59% reduction and 236,822 bytes smaller than its nearest competitor in size - PAK 1.6. But it took over ten minutes to do so. PKZIP in fast mode without the -EB4 switch was third largest in output file size.

ARC 6.01 did turn in surprisingly good times at 4:59, but its output file was a portly 2,795,383 bytes - over half a megabyte larger than PKZIP -EB4. Nonetheless, we note a dramatic speed improvement over previous ARC versions.

While PKZIP clearly is the performance winner, there are other factors to take into account. One is portability. Thom Henderson of SEA released his source code to the public quite early in the development of file compression utilities. This move has paid fairly rich rewards in many ways. Other programmers have adapted the SEA ARC program to architectures as varied as the Apple Macintosh, Atari ST, Commodore Amiga, Apple IIe, Unix, and several mainframe environments. Many of these ARC implementations are available on SEA's support BBS at (201)473-1991. The result is that a series of text files archived using ARC on an IBM can be transferred by modem to an Apple Macintosh or IIe and unarchived using a corresponding utility on that architecture with very little pain. It may be some time before that is the case with PKZIP.

Our choice for performance would have to be PKWare's new PKZIP program. For portability across a variety of architectures, ARC remains the standard for file compression utilities. The bad news is that the once universal archive standard is now splintered. But it is easy enough to place both PKZIP and ARC in your DOS path to be able to handle either. And the good news is that both programs are a notable improvement in speed, size, and function over the previous generation.

EDITOR'S NOTES

This issue of Boardwatch points up a quietly developing trend we find extremely positive - a dawning maturation of electronic bulletin board systems as an industry. The Gateway 89 exposition in New York, scheduled for the end of this month, shapes up to be the first BBS exposition of any size and despite some notably poor pricing and management moves by the sponsors, interest in the show appears to be quite high.

The most notable hallmark of this trend is the interest in BBS by companies and individuals who had no earlier interest in them. Western Digital has put up an excellent support BBS. Borland, Everex, Ashton-Tate, Everex, Microrim, Hayes, AST Research, and US Robotics all have product support systems now. And individuals and groups who have no interest in computers in general are looking carefully at electronic bulletin board systems as a communications medium.

In recent months, we've been distributing electronic publications such as **USA Today Decisionlines**, **Newsbytes**, and **BoxOffice** magazine to "pay" BBS around the country. Essentially, these systems pay a monthly subscription fee to post these periodicals on their system. Usually, they in turn charge their callers a subscription fee for access. But rather than charging \$12 hourly or even \$10 monthly, these infopreneurs are operating their service much after the fashion of a magazine with an annual subscription fee, renewal incentives, and so forth. Fees run from about \$25 up to as much as \$75 annually. The good news is that some of them are making a go of it. Growth in this area is occurring at an encouraging rate while commercial services such as **THE SOURCE**, where layoffs claimed a third of the work force this past month, are backpeddling furiously. We hear daily from operators of successful commercial bulletin board systems from across the USA and Canada. The recurrent theme is a single-minded desire to make an independent living from trafficking in information. And most of these people have an almost unnatural aversion to large corporations and

bureaucracies. This cottage information industry follows very closely Alvin Toffler's view of the future - and our own.

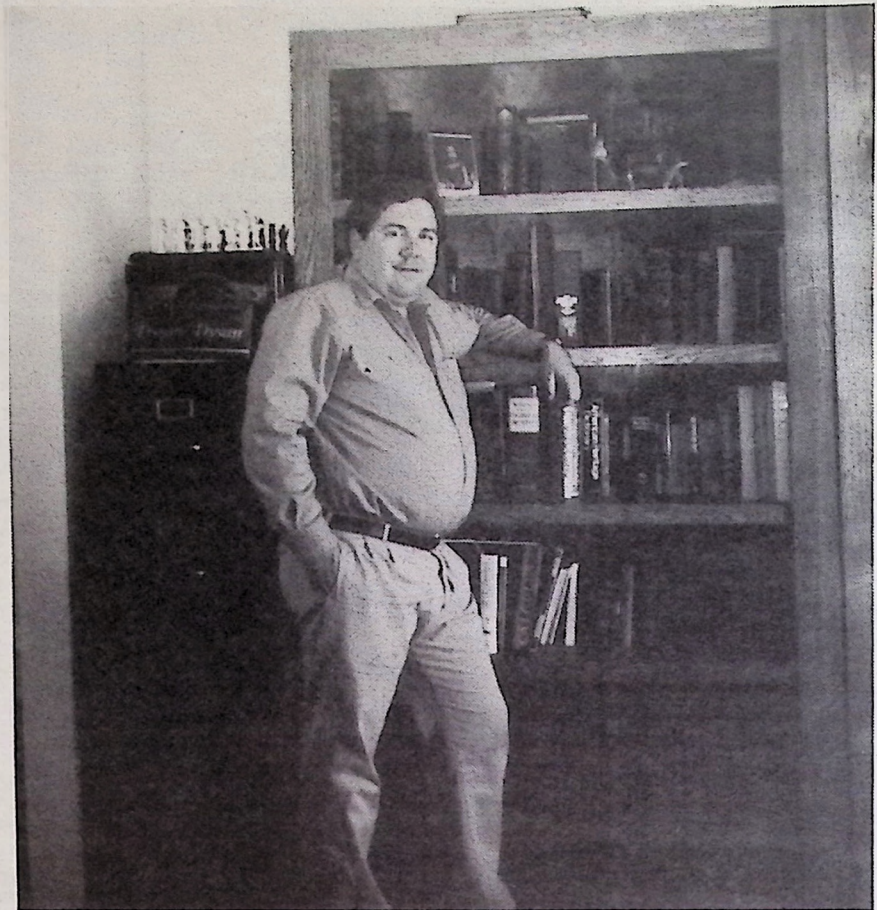
We see a day when many thousands of individuals will operate small, specialized information services that everyone in the country can afford - not just businesses capable of paying \$100 hourly for access to a database, but gourmand's everywhere who are willing to part with \$35 annually to access **NADINES PASTA RECIPES BBS**. And in this future world, infopreneurs will be able to pay for equipment, telephones, and still make a reasonably good living by collecting, organizing, and displaying information on a specific subject: mushroom hunting, model railroading, bird watching, fishing, chess, football, solar power, or even on the history, care, and collectability of fine briar smoking pipes.

With unabashed excitement, we received our new **U.S. Robotics Dual Standard HST/V.32** modem this past week - a superb piece of equipment.. And we note that Telebit has also issued

a dual mode modem of their own with the **T2500**. The good news is that the logjam at 9600 bps is broken. **CCITT V.32** always was the standard and now it is being adopted industry wide. The Telebit can operate at speeds up to 19,200 bps. The **CCITT V.32** will be the common mode between the two at 9600 bps. We look for other vendors to introduce dual mode modems offering very high speeds using proprietary techniques but a fall back to 9600 bps V.32 as a common standard. We would most strongly urge all readers to avoid purchasing new high-speed modems that do not feature V.32 compatibility or at least an easy upgrade path to add it.

What is the next speed on the horizon? The **V.33** standard for 19,200 bps of course - not due out of **CCITT** working committee until 1992. By then, **ISDN** telephone service should be widely available and those seeking ever higher speeds will probably opt for that route.

Stay connected.
Jack Rickard, Editor



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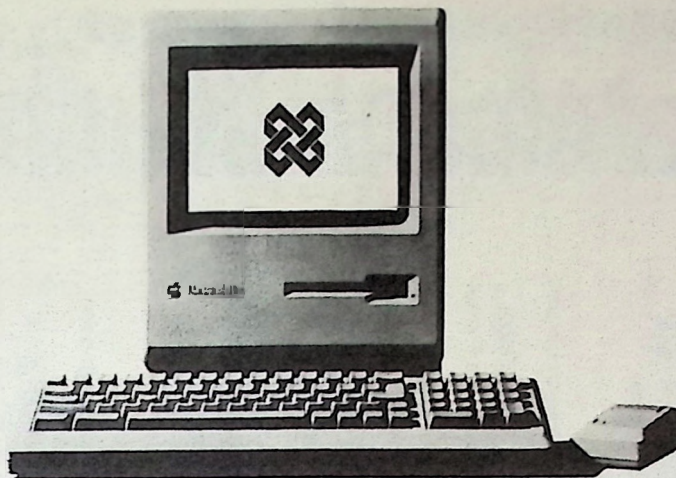
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
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Northrop Career Access	(612)890-5561	Northrop Aerospace Employment Opportunities	Northrop Corp	Rolling Meadows	
NYCENET BBS	(212)769-0550	New York City Education Network	New York City Board of Education	New York City	
OORWM Infolink	(202)586-9359	Radioactive Waste Disposal/Hazardous Materials Handling	Office of Civilian Radiation/Waste Mgmt.	Washington, D.C.	
OERI BBS	(800)222-4922	Educational Statistics and Data - Performance Stats -	US Department of Education	Washington, D.C.	
Omniverse	(206)235-8760	Home of Galaxy World Processor	Gordon J. Wanner	Renton	WA
Online Store DLX	(805)656-0379	Online Catalog of PC Hardware/Peripherals - Online Mailorder	Stan Snyder/Online Store	Ventura	CA
PC Pursuit Information	(800)835-3001	Unlimited LD Calls to 34 US Cities - \$25 Flat Monthly Rate	Telenet Communications	Reston	VA
PHYSICS Forum BBS	(413)545-1969	Physics and Astronomical Sciences	Univ. of Mass. Dept. of Physics/Astronomy	Amherst	MA
PKWare BBS	(414)352-7176	Home of PKARC and PKZIP File Compression Utilities	Phil Katz/PKWare Incorporated	Glendale	WI
ProComm Support BBS	(314)474-8477	Home of ProComm 2.4.2 and ProComm Plus Comm Prgms	Thomas Smith/DataStorm Technologies Inc.	Columbia	MO
Publishers Information Svce.	(312)342-6919	Xerox Ventura Publisher Support/Laser Printing/Scanning	George Weiners	Chicago	IL
S.I.R.E.N.	(916)485-2983	Sacramento Information Retrieval Info Exchange	Byte Boutique/Bonnie Goodwin	Sacramento	CA
SALEMDUG BBS	(202)646-2887	Hazardous Materials/National Dam Watch/Emergency Info	Federal Emergency Management Agency	Washington, D.C.	
Salt Air BBS	(801)261-8974	Home of PCBOARD BBS Software - National List of PCB Systems	Clark Development Company/David Terry	Murray	UT
Scenix Network	(213)372-2282	USA Today - BoxOffice Magazine - Local Real Estate	Connie Trantham/Steve Campbell	Manhattan Beach	
Science Resource Studies BBS	(202)634-1764	Federal R&D Budget - Technical Labor Market Statistics	National Science Foundation	Washington, D.C.	
SEAboard!	(201)473-1991	Support system for ARC, SEADOG, and AXE software.	System Enhancement Associates	Wayne	NJ
Second Ring, The	(203)268-5315	Home of RBBS Software	Tom Mack	Trumbull	CT
Silicon Valley Information Ctr.	(408)277-5758	Online Computer Magazine Index - Logon PUBLIC	San Jose Public Library	San Jose	CA
Society for Technical Comm. BBS	(202)393-3557	STC Job Service, Freelance Registry - Technical Writers	Society for Technical Communication	Washington, D.C.	
Synergy	(617)769-5468	Turbo Basic/Turbo C/Quick C/Turbo Pascal/Assembly Language	Gary Powers/Jim Boxmeyer	Norwood	MA
Take 3 BBS	(602)482-1001	Reviews of Movies/Videos/ Film Industry Job Clearinghouse	Dave Kidder	Scottsdale	AZ
TBBS Net 104/23	(303)699-9248	Home of The Bread Board System (TBBS) BBS Software	Phil Becker/Soft Inc.	Aurora	CO
Telecommunications Relay Station	(501)442-8777	Online Publications - Excellent TBBS System	Gary Funk	Fayetteville	AR
Telegozilla	(503)621-3746	Home of ZModem File Transfer Protocol/YModem/YAM	Chuck Forsberg/Omen Technology Incorp.	Portland	OR
Telnet Support BBS	(416)284-0682	Support Services for Telnet Communications Software	Colin Sampaleanu/Exis Incorporated	West Hill	Ontario
Texas State Law Library BBS	(512)463-1371	Online Legal Periodicals and Citation Database	Whole Earth Electronic Link	San Antonio	TX
The Well	(415)332-6106	Very Popular Big BBS - Hourly Charges	Phil Thomas/Thomas Business Systems	Sausalito	CA
Thomas Business Systems	(407)395-7057	Used Computer/Peripheral Price List Online Database	Dr. James Waldron	Boca Raton	FL
United Nations BBS	(201)795-0733	UN Press Releases - Unifex News - Unifex	US Department of Commerce US Naval Obser	Hoboken	NJ
US Naval Observatory BBS	(202)653-1079	Time - Date - Sunrise - Sunset - Enter @TCO for Commands	US Robotics Corporation	Washington, D.C.	
US Robotics - Sit UBU Sit	(312)982-5092	Support for US Robotics HST 9600 bps Modems	US Robotics Corporation	Skokie	IL
USA Today Distribution Service	(303)973-4222	Distribution Service for USA Today/Newsbytes/Boxoffice	Denver PC Boardwatch Newsletter	Littleton	CO
USNO Time of Day for Clocks	(202)653-0351	Xmits ASCII Time String - Sync Your PC to USNO Atomic Clock	US Dept. of Commerce US Naval Observ.	Washington, D.C.	
Vacation Florida Database	(407)839-0383	Florida Tourism Information/Database of Campsites/Hotels	Richard and Barbara Kenney	Orlando	FL
Ward and Randy's CBBS	(312)545-8086	World's First and Oldest Micro-based BBS - Since 2/15/78	Ward Christensen/Randy Sues	Chicago	IL
WeatherBank	(801)977-9827	Online Weather Forecasts for Any City - Download Radar Data	Steve Roof/WeatherBrief Data Services	Salt Lake City	

BOARDWATCH MAGAZINE

LIST OF AREA CODE 303 ELECTRONIC BULLETIN BOARD SYSTEMS AND ON-LINE INFORMATION SERVICES - APRIL 1989

TITLE	PHONE	DESCRIPTION	TYPE	BPS	SOFT	CITY	SYSP
KCNC Storm Center 4 Weather	839-1188	National Weather Service Digital Radar	Custom	3/12	Custom	Denver	KCNC TV
NBS Automated Computer Time	494-4775	ACTS - Sync PC Clock to NBS Atomic Clock	Custom	3/12	Custom	Boulder	Natl. Bureau of Standards
Adelante 104/93	443-8292	Central/Latin America Social Issues	IBM	3/12/24	Opus	Boulder	Zahai Stewart
Adventures Unlimited 104/616	1-223-4534	Online Games - Chess - Traders - More	IBM	3/12/24	QuickBBS	Fort Collins	Ray Randolph
Aerie, The 104/40	292-3162	Science Fiction	IBM	3/12	Opus	Denver	Leland Dirks
AmNet On-line 104/65	1-223-1297	Animal Rights Issues/Animal Rights Echo	IBM	3/12/24	TBBS	Ft. Collins	James Cherry
Arkham Public Library 104/48	494-7970	Traders Game/IBM Software	IBM	3/12/24	QuickBBS	Boulder	Neil Beatty
Aurora Chairman	340-1844	City of Aurora Council/Mayor Forum	IBM	3/12	Chairman	Aurora	City of Aurora
Byte Shop 104/311	794-5065	Jokes/Good Echowall/Downloads	IBM	3-96HST	QuickBBS	Littleton	Dan O'neal
CBA Information System	329-0159	Continental Basketball Association	IBM	3/12	TBBS	Denver	???
Chaffield Armory	972-9023	Firearms for Sale/Trade - Online Games	IBM	3/12/24	QuickBBS	Littleton	Dave Bell
Classifieds Plus/Consumers	794-0491	Consumer Interests/For Sale Items	IBM	3/12	RBBS	Littleton	Arnold Peterson
Club Micro 104/88	832-5850	*C*Language/Database/Communication Files	IBM	3-96HST	Opus	Denver	Don Marguart
CMOS - CO Min Operating System	832-4078	Amiga/IBM-Utilities-Pictures-Buy/Sell	IBM	3-96MIC	QuickBBS	Denver	Kevin Truitt
CO State Judicial BBS 104/420	831-1704	Colorado State Judicial ADP Department	IBM	3/12/24	QuickBBS	Denver	Scott V. Hopta
Colorado Broadcasters 104/42	572-6256	Commercial Radio Frequency Lists	IBM	3/12	Opus	Denver	Jeff Brothers
Colorado West BBS	1-241-1966	Grand Junction MUG - Ham/Packet Radio	IBM	3-96Haye	PCBoard	Grand Junction	Wayne Hunt
Comm-Post, The 104/666	534-4646	Astronomy - TI-PC - 90+ MB of Files	IBM	3-96HST	TBBS	Denver	Brian Barte
Computer Consulting 104/318	973-1002	Amiga/Atari/IBM/TT - Medical Information	IBM	12/24	Opus	Littleton	Jim Bucks
Computer Linkage 104/444	499-1022	Alcoholism/Mental Health	IBM	3/12	QuickBBS	Boulder	Ron Kueski
Consumer Net 104/418	455-3764	IBM/Compatibles Subscription Board	IBM	3-96MIC	RBBS	Denver	Repe Cedar
Control Systems 104/417	458-6248	9:00 PM to 7:00 AM	IBM	3/12	QuickBBS	Denver	Lupe Ramiriz
Cook, The 104/419	861-0814	Messages (32 areas) \$10 annual fee.	IBM	24	WWIV BBS	Denver	Richard Harper
Corner Pub, The 104/414	759-8619	Oldest User's Group in Area - CP/M - IBM	IBM	3/12/24	Fido	Broomfield	Richard Douglas
CP/M SIG INC 104/372	465-1313	CSM Petroleum Engineering Department	IBM	3/12/24	Opus	Golden	Al Lundquist
CSM-SPE Oil Patch 104/59	273-3239	Science Fiction/USA Today	IBM	3-96HST	QuickBBS	Denver	Max Bordon
Cyber-Zone, The 104/61	860-0126	Golden Micro Computer Sales/Support	IBM	3-96HST	QuickBBS	Denver	Jonathan Wood
D-Link 1 104/411	936-2791	Role Playing Games	IBM	3/12/24	QuickBBS	Denver	Bob Wells
Dark Crystal, The 104/421	654-1278	IBM Messages	IBM	3/12/24	TCOMM	Denver	Steve Eoyd
Data Bank	494-0167	Three systems via one port	IBM	3/12/24	???	Littleton	Guido Binetti
Data Link	797-8480	Astronomy Files-Telix/SF Echos/USA Today	IBM	3/12/24	Opus	Denver	???
Day's End 104/20	650-5636	R:BASE Information and Programs	IBM	3/12/24	Wildcat	Lakewood	Chris Day
Denver Area R:BASE Users Group	422-2149	\$0.25 per minute Source Code Downloads	IBM	3/12/24	OPUS	Evergreen	Paul Fullerton
Denver Link-Up	1-976-8800	Back Issue Index, Dialing Directories	IBM	12/24	TBBS	Littleton	Jeffrey Delude
Denver PC Boardwatch 104/555	973-4222	TRS80 Support/16 Online Adventure Games	IBM	3/12/24	TBBS	Niwot	Jack Rickard
Dinosaur Board 104/114	1-652-3595	IBM/Atari Downloads - FoRem Net Mail	IBM	12/24	Forem	Denver	Chris Anderson
Dog House, The	320-0501	On-line Traders and Baseball Games	IBM	3/12/24	QuickBBS	Littleton	Lonnie Shinault
DROID, The	933-1501	IBM and Amiga Special Interest Areas	IBM	3/12/24	QuickBBS	Littleton	Leonard Vandermate
Eagle's Nest 104/315	933-0701	Education Issues Kindergarten - 12th	IBM	3/12/24	TBBS	Littleton	Ronald Olsen
Education 2000 104/29	449-9807	TBBS Software Support - Hayes/USR Modems	IBM	3/12/24	TBBS	Boulder	Roger Salamen
eSoft Support	699-8222	School Bulletin Board System	IBM	3-96HST	TBBS	Aurora	Phil Becker
Estes Park High BBS	1-586-4131	Online Chess - Adult Areas	IBM	3/12	Opus	Estes Park	Joe Lundstrom
Fox Empire 104/617	1-484-4359	Just starting out.	IBM	3/12/24	QuickBBS	Fort Collins	Andrew Boardman
Fred's BBS	233-1316	Home of OKNEWS - 104/213	IBM	3/12/24	QuickBBS	Lakewood	Fred Schupner
Free Information Exch. 104/89	699-1516	Fort Collins Group - Computer Express	IBM	3/12/24	Opus	Denver	Charles Fritka
Front Range Online Systems	466-2296	Games / C Language / MIDI 6PM-7AM	IBM	3/12/24	QuickBBS	Broomfield	Gary Jones
Front Range PC Users Group BBS	1-493-4094	Messages / Downloads for Homosexuals	IBM	3/12	Wildcat	Fort Collins	Tom Oppenheimer
FutureWave BBS 104/57	440-7425	CoreWars Game/C Language/Great Shareware	IBM	12/24	Opus	Boulder	Mike Reetz
Gault's Gulch 104/23	860-9259		IBM	3/12/24	QuickBBS	Denver	Bill Williams
Gay Community 104/19	795-1215		IBM	3/12	Wildcat	Littleton	???
GDP Technologies BBS	673-9470		IBM	3/12/24	Wildcat	Lafayette	Tom Gettys

Grotto, The	694-9050	Amiga, Pascal - Ebert Personal Computers	IBM	3/12/24	TBBS	Aurora	Vincent Veritas
In To The Night 104/31	659-1897	IBM Game Files 9PM-7AM	IBM	3/12	Opus	Fort Lupton	Kris White
Into The Wind 104/63	939-9272	Support for Shamaal Software 10P-11A	IBM	3/12/24	Opus	Boulder	Dana P'Simer
JEFFCOM BBS	273-6951	Jefferson County Public Schools	IBM	3/12	RBBS	Golden	Ron Dries
King's Market Bookshop 104/115	665-6091	Books, Writers, On-line Adventure Games	IBM	3/12/24	TBBS	Boulder	Jim Burt
Lensman, The	979-8953	Science Fiction/Fantasy-Invitation only	IBM	3/12	GT Power	Littleton	Greg Bradt
Lodge, The 104/212	420-0305	Arvada Quick BBS Board	IBM	3/12/24	QuickBBS	Arvada	Harold "Monty" Montrose
M&D's Traveling Circuits	665-3746	Conversation - Techie Topics - Cooking	IBM	3/12	RBBS	Louisville	Marshall Barry/Dede Powel
MACE 104/416	331-0982	Metro Area Computer Enthusiasts	IBM	3/12	QuickBBS	Denver	Bucky Carr
Manville Info Services 104/978	978-3946	Business Software / Apple Macintosh	IBM	3/12	Fido	Littleton	???
MASC Library	497-5848	PC SIG CD ROM Online 4:30PM-7AM Only	IBM	3/12/24	RBBS	Boulder	US Department of Commerce
Master Work, The 104/55	341-6614	In Search of the Lost Chord	IBM	12/24	Opus	Aurora	Roy Prickett
Maverick	1-434-4211	Hardware Sales - \$10 Annual Fee	IBM	3/12/24	RBBS	Grand Junction	David Fouts
Metamorphosis	1-772-7229	Much Smaller than Before with Minihost	IBM	3/12/24	Minihost	Lafayette	Tony Ferris
Micro-Date 104/64	455-4793	Denver's Premier Matchmaking Service	IBM	3/12/24	TBBS	Littleton	Datemaster
MicroLink B 104/108	972-9600	Good Download Library - USA Today News	IBM	3-96HST	TBBS	Littleton	Girard Westernberg
MicroLink D 104/711	237-8575	Over 200 MB-Doesn't Break	IBM	3-96HST	TBBS	Lakewood	???
MicroLink Minus Two 104/204	329-9598	Professional Comp. Sales Inc./Astronomy	IBM	3/12/24	TBBS	Denver	Paul Smith
Midrash 104/18	289-6864	Messianic Judaism - Religious/Philosoph.	IBM	3/12/24	QuickBBS	Denver	Daniel Segard
Mile High BES	733-1340	Triathalons - Race Schedules - Fitness	IBM	3/12	RBBS	Denver	Bill Ankella
Mile High Net	671-7308	Fido Board	IBM	3/12/24	Fido	Aurora	Dave Miller
Mirage Systems	933-2870	Online Games - 120 MB of Downloads	IBM	3/12/24	Phoenix	Littleton	Jon McDonald
Missing Persons BBS	861-4607	Search Service for Missing Persons	IBM	3/12	Wildcat	Denver	Dave Suiter
Mohave Net Gateway 104/62	426-0623	Science Fiction/Medical Echo	IBM	3/12/24	QuickBBS	Denver	Claude Warren
New Age Bulletin Board, The	665-9152	Inner Development, Natural Health&Envir	IBM	3/12	TBBS	Lafayette	Harold Piser
NightFlyer 104/210	467-9199	Basic/dbase/Assembler/C Programming	IBM	3/12/24	QuickBBS	Arvada	Marcel Madonna
Northern Area Telecomm 104/606	1-669-2553	(NATO) Traders - SI Droids games	IBM	3/12	Opus	Loveland	Byron L Ferguson
Nurse Link 104/52	270-4936	UCHSC School of Nursing	IBM	3-56HST	TBBS	Littleton	Larry McNeill
OKY BBS 104/113	494-0533	Armenian Electronics Consultant	IBM	3/12/24	QuickBBS	Boulder	Onnig Kouyoumdjian
On-Line Consulting 104/45	449-5251	Consultant Directory/Desktop Publishing	IBM	3/12/24	Opus	Estes Park	Lee Lason
On-Line Shopping Service	442-5125	Boulder Home Grocery Delivery \$5 + 5%	IBM	3/12	Chairman	Boulder	Pete Dempsey
P2B2 S 104/51	329-3337	Public Psychiatry / AI Themes 6PM-8AM	IBM	3/12/24	QuickBBS	Denver	Claude Warren
Paranet Omega/The Novastar Gp	431-1343	Paranormal/Religion/UFO/Oodites	IBM	3/12/24	QuickBBS	Wheatridge	Mark Owens/Mike Corbin
PCIS 104/904	789-4610	PC Info Services - List of User Groups	IBM	3/12/24	Opus	Englewood	Phil Kaiser
Pentax Support	460-1637	CD WORM/Flatbed Scanner/Fanfold Laser	IBM	3-56HST	TBBS	Broomfield	Chris Anderson
Phoenix TBBS 104/739	841-9570	USA Today Newspaper/4 lines/INFO-MAT Mag	IBM	3/12/24	TBBS	Parker	Larry Kayser
Pinecliff 104/28	444-7073	170 Meg - Online Order for CDB Systems	IBM	3/12/24	Opus	Boulder	Craig Baker
Pink Flamingo 104/607	497-3934	Previously Fido NBS	IBM	3/12/24	QuickBBS	Boulder	Cathy Nicoletti
Priority Business Sys. 104/41	771-8107	PC Magazine/Tech Journal Files	IBM	3/12	Opus	Littleton	John Bilbro
Professional System, The	740-2223	Writers, Lawyers, EDP Auditors	IBM	3/12	TBBS	Littleton	Bob Voorhees
Quick BBS Support Board 104/24	423-3114	Home of Quick BBS Software	IBM	3/12/24	QuickBBS	Arvada	Adam Hudson
R.A.B.I.T.	757-9509	Colorado Highway Department - Planning	IBM	3/12	TBBS	Denver	Colorado Dept. Highways
Rabbit Mountain BBS	460-1093	Online Games/Tradewars/Chess	IBM	3-56HST	Wildcat	Broomfield	Kevin Dahstedt
Reading Room, The 104/513	680-0690	6PM - 6AM	IBM	3/12/24	PCBoard	Aurora	Don Bell
Realtime Control & Forth Board	278-0364	Vesta Technology/Denver Forth Int. Group	IBM	3/12/24	QuickBBS	Wheatridge	Jack Woehr
RBBS Support Hdqtrs. 104/54	343-6707	Support for CoCo RBBS Software	IBM	3/12/24	QuickBBS	Aurora	Ron Bihler
Rocky Mountain RBBS	750-2107	INFO NEEDED	IBM	3/12	RBBS	Aurora	Steve Konreich
Scout Net	629-6354	Outdoors/Eoy Scouts of Amer. 8PM-9AM	IBM	300	Fido	???	Stark
Short Line 104/36	778-7312	Varied Topics, FidoNet, BinkleyTerm	IBM	12/24	Opus	Lakewood	Alan Applegate
Silver Streak, The	790-2534	Science/Engineering/Turbo Pascal Utilis	IBM	3/12/24	Wildcat	Littleton	Dennis McKinney
SmartQuest I 104/604	469-7014	The Tavern - Hot 386 with Games/ReadMACs	IBM	12-96HST	QuickBBS	Broomfield	John Denny
SmartQuest V 104/317	973-0625	The Tower	IBM	3/12/24	QuickBBS	Littleton	Radford Walker
SmartQuest III 104/209	469-0125	The TALL Snarl! Messages-Games-No files	IBM	12/24	QuickBBS	Broomfield	Elliott Mosher
SmartQuest III 104/46	761-1634	The Arena On-line Games, Fantasy, AD&D	IBM	3-56HST	QuickBBS	Englewood	Dax Davis
Sound Doctrine Bulletin Board	680-7209	Christian BBS / Sound Doctrine Church	IBM	3/12/24	TBBS	Aurora	Tim Williams
Space Environment Service Cntr	497-5000	NOAA Solar Flare Forecast / Advisory	IBM	3/12	PBBS	Boulder	US Dept of Commerce
Space Network	494-8446	Space Exploration Information	IBM	3/12/24	TBBS	Boulder	Tom Meyer

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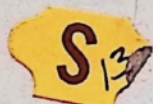
TITLE	PHONE	DESCRIPTION	TYPE	BPS	SOFT	CITY	SYSOP
Squirrel's Nest	1-242-7977	Grand Junction BBS	IBM	3/12/24	PCBoard	Grand Junction	Allan Worley
Steamboat Information	1-879-6741	Info on Steamboat Springs Area	IBM	3/12	TBBS	Steamboat Springs	???
Stone Wall 104/112	499-2676	Tradewars/ReadMAC Files	IBM	3/12/24	QuickBBS	Boulder	Mike Reetz
TBBS Net 104/23	699-9248	The Byread Board System Support	IBM	3/12/24	TBBS	Aurora	Phil Becker/eSoft Inc.
TelePeople 104/59	455-3283	Lifestyles - Singles - Divorced	IBM	3/12/24	TBBS	Denver	Terry Travis
Terus Public BBS 104/43	469-7161	MINDS AI TextBase Indexer Support	IBM	3-96HST	Opus	Broomfield	Todd Hill
Terus RegUser 104/44	341-1404	MINDS Online Textbase - USA TODAY	IBM	3-96HST	Opus	Aurora	Bart Henthorn
The 8th Sea 104/610	252-9235	Net 104 Coordinator - Lots of Echomail	IBM	3/12/24	QuickBBS	Northglenn	Rod Lamping
This End Up 104/30	429-2445	Denver PC Boardwatch/USA Today	IBM	3/12/24	Opus	Westminster	Steve Carnes
Tower of Thoth, The	1-651-3697	IBM/Apples/Mac/Commodore/CPM/TRS	IBM	3/12	Opus	Longmont	Heidi Short
Translations Unlimited	988-5765	Translations/Data Communications	IBM	3/12/24	Minihost	Lakewood	Jon Johnson
Trout Unlimited	499-2828	Trout Fishing / Water Condition Reports	IBM	3/12	Fido	Boulder	Ralph Stewart
Twin Peaks PCBoard	1-651-0225	On-line Games	IBM	3/12/24	PCBoard	Longmont	Ken Krueger
Value Line, The 104/510	366-1611	MultibBS System Opus/QuickBBS/RBBS	IBM	3/12	QuickBBS	Aurora	Chris Millikin
Watchdesk, The 104/66	450-0822	Safety - Arson - Hazardous Material	IBM	3-96HST	QuickBBS	Thornton	Emit Hurdlebrink
Waterton Computer Club	977-7353	Martin Marietta Employees - 5PM-7AM	IBM	12/24	RBBS	Denver	Ken Beaudrie
Weyr, The 104/211	429-2975	Good Collection of Game Software	IBM	3/12/24	Opus	Westminster	Ken Shimko
World Peace BBS 104/415	320-4822	Current Events, Politics, Religion	IBM	3/12/24	QuickBBS	Denver	Bucky Carr
YUCCA Mountain Project Group	236-9812	US Bureau of Reclamation - Dept of Int.	IBM	12-19200	PCBoard	Denver	Mark Pabst
C.A.R.L Denver	830-0519	Colorado Alliance of Research Libraries	Tandem	24	Custom	Denver	N/A
C.A.R.L Denver	830-1165	Colorado Alliance of Research Libraries	Tandem	3/12/24	Custom	Denver	N/A
C.A.R.L Denver	830-1546	Colorado Alliance of Research Libraries	Tandem	12	Custom	Denver	N/A
C.A.R.L Denver	830-1547	Colorado Alliance of Research Libraries	Tandem	12	Custom	Denver	N/A
C.A.R.L Denver	830-1548	Colorado Alliance of Research Libraries	Tandem	3/12/24	Custom	Denver	N/A
C.A.R.L Denver	830-2199	Colorado Alliance of Research Libraries	Tandem	3/12/24	Custom	Denver	N/A
C.A.R.L Denver	830-2241	Colorado Alliance of Research Libraries	Tandem	3/12/24	Custom	Denver	N/A
C.A.R.L Denver	830-2265	Colorado Alliance of Research Libraries	Tandem	3/12/24	Custom	Denver	N/A
C.A.R.L Denver	830-2297	Colorado Alliance of Research Libraries	Tandem	3/12/24	Custom	Denver	N/A
Beacon Technical Services	979-2245	Entertainment Software Authors	Amiga	3/12	Citadel	Littleton	Mark Baldwin
C.D. Players	825-0419	Computer Discount On-line Store/Amiga	Amiga	3/12/24	TBBS	Denver	Tony Scott
Outer Limits BBS, The	1-484-1699	Amiga System Emulating IBM-XT	Amiga	2000	OPUS	Fort Collins	Gary Whicker
Aces High	329-6579	Amiga Programming/Messages	Apple	3/12/24	GBBS	Denver	Glenn Hayhurst
Apple Pi A La Modem	986-7525	Apple User Group Messages/Downloads	Apple	3/12/24	GBBS	Lakewood	Erik Von Halley
APSNat	693-6737	Aurora Public Schools Network	Apple	3/12/24	GBBS	Aurora	Columbia Middle School
Box's Cabin, The	424-9185	Apple / Technical Notes	Apple	3/12/24	Protee	Arvada	Kent Roberts
C.A.C.H.E	745-4960	CO Apple & Compatible Home Enthusiasts	Apple	3/12/24	GBBS	Denver	Gary Edwards
City Morgue, The	442-8498	Necromaniacal Fixation With Stiff Bodies	Apple	12/24	GBBS	Boulder	???
Denver Deal-Net	989-9245	Hearing Impaired/Computing	Apple	3/12	Protee	Lakewood	David Sheneman
DJ	789-0500	Galactic Conquest Game On-line 40 MB	Apple	3-96HST	GBBS	Englewood	David Metzger
Funny Farm	989-0915	Apple Only BBS	Apple	12/24	??	Lakewood	???
GateKeeper, The	755-4210	Gateway High School/Teen Interests	Apple	3/12/24	GBBS	Aurora	Steve Brothers
Genesis Project	287-8267	Apple II General	Apple	3/12/24	Protee	Commerce City	Gene Humbert
Greeley-Com-Net	1-351-8861	Modem Users Board	Apple	3/12/24	GBBS	Aurora	Lowell Shatraw
L&L Support	420-3568	Primary GBBS Pro Software Support BBS	Apple	3/12/24	GBBS	Greeley	Lance Taylor-Warren
Land of London	987-2094	Fantasy Runequest Games	Apple	3/12/24	GBBS	Arvada	???
LES-COM-net	233-5824	Lesley College Comm Net - GBBS Multiline	Apple	3/12	AlphaII	Lakewood	George Willett
Mom's BBS	690-4913	General Message/Socializing	Apple	3/12	ALFA-III	???	???
Next Generation	425-6235	On-line Games	Apple	12/24	Protee	Golden	Tony ???
Pro Denver	428-0372	Proline Unix Emulator for Apple	Apple	3/12/24	Proline	Denver	Vince Cooper
S.O.B. Lanes, Inc.	452-6902	Apple Board with Bowling Theme	Apple	3/12	GBBS	Westminster	Simon
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